

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTONA KEY TO THE GENERA OF ANTHOMYIINAE
KNOWN TO OCCUR IN AMERICA NORTH OF
MEXICO, WITH NOTES ON THE GENUS *GANPERDEA*
ALDRICH (DIPTERA, ANTHOMYIIDAE)

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Although the Anthomyiinae include many forms of economic importance, no satisfactory key to all the genera found in America north of Mexico is available. It is hoped that the key here presented will enable workers to place their material in the proper genus more easily and surely. The classification is that used by Stone, et al. (1965).

The genus *Ganperdea* Aldrich for a long time has been considered a synonym of *Neohylemyia* Malloch. It is shown here that the type-species of the two genera are sufficiently different to necessitate either recognizing the genera as distinct (as is here done) or broadening the concept of *Leucophora* Robineau-Desvoidy enough to contain both of them.

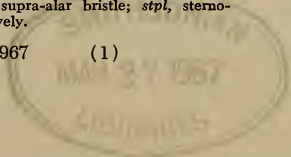
Family ANTHOMYIIDAE

Without well-developed postscutellum or hypopleural bristles; sixth (anal) wing vein nearly always attaining wing margin although often very weakened apically; third and fourth wing veins never distinctly convergent apically.

Key to Subfamilies of ANTHOMYIIDAE¹

- 1 (2). *Stpl* 1 to 3; front equally wide in both sexes and always without cruciate interfrontal bristles; lower calypter never projecting beyond upper; scutellum without fine

¹ The following abbreviations are used: *acr*, acrostichal (hairs); *ad*, anterodorsal bristle; *av*, anteroventral bristle; *dc*, dorsocentral bristles; *pd*, posterodorsal bristle; *pra*, prealar bristle; *pv*, posteroventral bristle; *sa*, supra-alar bristle; *stpl*, sterno-pleural bristles; *t₁*, *t₂*, fore and hind tibiae, respectively.



- erect hairs on lower surface; propleura usually with fine (pale) hairs in center (if bare in center and with 2 or 3 *stpl*, scutellum bears only two strong bristles well behind apex); costal spine lacking SCATOPHAGINAE
- 2 (1). *Stpl* 2 to 5; front in male usually less than $\frac{1}{3}$ of head width, or when broad (as in female) usually with cruciate interfrontal bristles; lower calypter frequently projecting beyond upper; propleura bare or with fine (black) hairs in center; scutellum with strong apical bristles; costal spine frequently well developed.
- 3 (4). Lower costal margin of wing with several equally large, but rather short, stout bristles; scutellum without hairs beneath; front of both sexes about $\frac{1}{3}$ of head width, with cruciate interfrontals (small in *Circia*) FUCELLIINAE
- 4 (3). Lower costal margin of wing without conspicuous bristles, or if such are present, one or two at costal fracture are larger (costal spine); scutellum nearly always with fine erect hairs beneath; front usually narrowed in male ANTHOMYIINAE

Subfamily ANTHOMYIINAE

Key to Tribes and Genera Known to Occur in America North of Mexico

- 1 (10). Eyes broadly separated in the male, and arista pubescent to nearly bare (plumose in some exotic genera); calypteres small to very small; cruciate interfrontal bristles present Tribe CHELISIINI
- 2 (3). Wing narrowed basally; anal vein sometimes not attaining wing margin *Chelisia* Rondani
- 3 (2). Wing elliptical or broadest towards base; anal vein attaining wing margin.
- 4 (5). Cheek half as high as eye; antennae large; costal spine reduced; male hind basitarsus suddenly constricted near base *Myopina* Rob.-Desv.
- 5 (4). Cheek much less than half as high as eye; hind basitarsus of male of usual form.
- 6 (7). Third antennal segment hardly more than the length of the second; parafacials and cheeks narrow; *t*₃ without *pv* spur *Chiastochaeta* Pokorný
- 7 (6). Third antennal segment at least twice as long as second; parafacials and cheeks somewhat broadened.
- 8 (9). *T*₃ with *pv* spur *Chirosia* Rondani
- 9 (8). *T*₃ without *pv* spur; with 1 *ad* and 2 *pd* *Pseudochirosia* Ringdahl

- 10 (1). Eyes more or less closely approaching each other in male (front at narrowest point less than $\frac{1}{3}$ total head width), or if more widely separated, arista long-bipectinate; calypteres moderately developed — Tribe ANTHOMYIINI
- 11 (14). Pteropleura with bristle or hairs.
- 12 (13). Pteropleura with a noticeable bristle on dorsal margin below wing base; propleura bare *Emmesomyia* Malloch
- 13 (12). Pteropleura with several fine hairs; prosternum and propleura with fine black hairs *Eremomyioides* Malloch
- 14 (11). Pteropleura bare.
- 15 (16). Eyes hairy and abdomen broad, not much longer than wide; eyes in both sexes distinctly separated
..... *Alliopsis* Schnabl and Dzedzicki
- 16 (15). Eyes bare, or if hairy, abdomen much narrower than long and eyes contiguous in male.
- 17 (18). Propleura with fine erect black hairs; proboscis robust, not lengthened; arista pubescent to nearly bare
..... *Anthomyia* Meigen
- 18 (17). Propleura bare, or if haired, proboscis long and slender and arista bare.
- 19 (20). Scutellum silvery gray with blackish lateral spots; abdomen elongate-cylindrical *Eustalomyia* Kowarz
- 20 (19). Scutellum colored otherwise, or abdomen flattened dorsally.
- 21 (24). Proboscis elongate and slender, as long as thorax (except in *Proboscimyia brevis* Hockett); vibrissae approximated.
- 22 (23). Arista long-bipectinate, swollen at base; t_3 with 2 *ad*, 2 *pd*; t_1 with 2-3 posterior bristles; calypteres subequal
..... *Neohylemyia* Malloch
- 23 (22). Arista nearly bare; t_3 with 2-3 *ad*, 2-3 *pd*; lower calypter protruding beyond upper *Proboscimyia* Bigot
- 24 (21). Proboscis less elongate.
- 25 (26). T_3 with long and strong mid *ad* and *pd* bristles, each half as long as tibia *Paraprosalpia* Villeneuve
- 26 (25). T_3 with median bristles shorter.
- 27 (28). Arista plumose; lower calypter protruding beyond upper; legs black *Hydrophoria* Robineau-Desvoidy
- 28 (27). Arista pubescent to bare, or if plumose, lower calypter not protruding.
- 29 (30). Hypopleura with some small hairs in front of and behind spiracle; oral margin protruding beyond vibrissae
..... *Calythea* Schnabl and Dzedzicki
- 30 (29). Hypopleura bare.
- 31 (32). T_1 with dorsal preapical as long as tarsal segments 1 and 2 together; t_3 with only 1 conspicuous dorsal bristle; lower calypter protruding beyond upper — *Anthomyiella* Malloch

- 32 (31). T_1 with dorsal preapical not longer than basitarsus; t_3 with more than 1 conspicuous dorsal bristle; lower calypter not conspicuously protruding. (Except in *Hylemya* subg. *Paregle*).
- 33 (34). Male abdomen not flattened; t_3 with series of *pv* hairs or bristles; female usually with 2 or more strong curved apical spines on cerci; front of female less than $\frac{1}{3}$ of total head width; vibrissae approximated (closer to each other than cheek width directly below eye); *cf.* also *Ganperdea* *Leucophora* Robineau-Desvoidy
- 34 (33). Male abdomen flattened basally; otherwise not as above.
- 35 (36). T_3 with 2 *pd* and t_2 lacking mid-ventral bristle
..... *Pegomya* Robineau-Desvoidy
- 36 (35). T_3 with less or more than 2 *pd*, if with only 2, t_2 with mid-ventral bristle.
- 37 (38). Vibrissal area with many long accessory setulae invading ventral half of facial margin; vibrissal angle and oral margin noticeably protruding beyond frontal margin in profile: *pra* reduced *Macateeia* Malloch
- 38 (37). Vibrissal area with only a few accessory setulae which do not invade face; oral margin not unusually produced.
- 39 (40). With 4 postsutural *dc*; *stpl* 3 + 2 *Macrophorbia* Malloch
- 40 (39). With 3 postsutural *dc*; *stpl* fewer.
- 41 (42). Sides of scutellum with more than a single row of hairs below the marginals; interfrontals absent in both sexes; posthumeral bristles duplicated, lower equal in size to upper in male; t_3 with 2-3 *ad* *Eremomyia* Stein
- 42 (41). Sides of scutellum with no more than a single row of hairs below the marginals; lower posthumeral not developed or much smaller than upper; t_3 with 4 or more *ad*.
- 43 (44). Arista long-bipectinate (Fig. 6); *t* with 1-2 posterior and 1 small *ad*; costal spine very small *Ganperdea* Aldrich
- 44 (43). Arista bare or pubescent *Hylemya* Robineau-Desvoidy (including subgenera *Acrostilpna* Ringdahl, *Botanophila* Lioy, *Craspedochaeta* Macquart, *Crinurina* Karl, *Delia* Rob.-Desv., *Egle* Rob.-Desv., *Hylemyza* Schnabl and Dziedzicki, *Lasiomma* Stein, *Paregle* Schnabl, *Pegohylemyia* Schnabl, *Phorbia* Rob.-Desv., *Pycnoglossa* Coquillett)

Genus GANPERDEA Aldrich

Pergandea Aldrich, 1919, Proc. Ent. Soc. Wash. 21: 106; type-species by original designation, *P. apivora* Aldrich; *preocc.* by Ashmead 1905 in Hemiptera.

Ganperdea Aldrich, 1921, Ins. Ins. Mens. 9:98; nom. nov. for *Pergandea* Aldrich, not Ashmead.

Huckett, 1924, Cornell Univ. Agric. Expt. Sta. Men. 77:37; Séguy, 1937, Gen. Ins., fasc. 205: 129; Huckett, 1965, in Stone *et al.*, U.S. Dept. Agr., Agr. Handbook 276: 867; as syn. of *Neohylemyia* Malloch.

As shown in the foregoing key, the genera *Neohylemyia* Malloch (type-, and sole known, species, *N. proboscidalis* Malloch) and *Ganperdea* differ in characters usually considered of generic value in the Anthomyiidae. However, it is likely that both genera, as well as *Proboscimyia* Bigot, may be synonyms or subgenera of *Leucophora*. Several species of the latter genus and *Ganperdea apivora* (Aldrich) are known to be inquilines or parasites in the nests of solitary bees and wasps. Nothing is known of the biology of *Neohylemyia* and *Proboscimyia*.

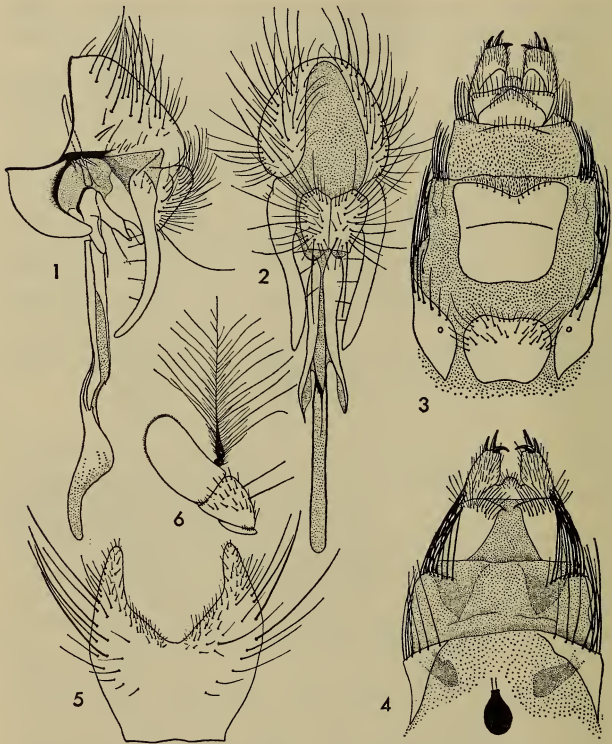
Two species may be referred to *Ganperdea*, although they differ from each other in rather important characters, most of which, however, are developed to some extent in one or another of the many species of *Leucophora*. The type-species of *Ganperdea* has such a broad front in the male that it would key to the tribe Chelisiini were the cruciate interfrontal bristles not absent or extremely small and fine.

Key to Known Species of *Ganperdea* Aldrich

- 1 (2). Thoracic dorsum gray pruinose with narrow median brown stripe; presutural *acr* hairs usually quite weak, in one irregular row; *pra* usually hardly distinguishable from surrounding hairs; *stpl* 1 + 1. lower posterior bristle usually not distinguishable; fine hairs on lower surface of scutellum usually lacking; male front 0.35 to 0.37 of total head width, sometimes with very small pair of cruciate interfrontals; male postabdomen as in Figs. 1 and 2; female postabdomen as in Figs. 3 and 4; male fifth sternite as in Fig. 5 -----
----- *G. apivora* (Aldrich)
- 2 (1). Thoracic dorsum largely brown pruinose with slightly darker middle stripe; presutural *acr* hairs strong, in two distinct rows; *pra* usually rather strong, nearly half as long as *sa*; *stpl* 1 + 2, lower posterior bristle usually strong; fine hairs on lower surface of scutellum distinct; male front 0.07 to 0.08 of total head width; postabdomen and male fifth sternite as figured by Huckett 1924, Figs. 50, 140, 155, 168 -----
----- *G. mallochii* (Huckett)

Ganperdea apivora (Aldrich)
(Figs. 1-6)

Pergandea apivora Aldrich, 1919, Proc. Ent. Soc. Wash. 21: 106.
Ganperdea [apivora] Aldrich, 1921, Ins. Ins. Mens. 9: 98.
Neohylemyia apivora (Aldrich) Séguy, 1937, Gen. Ins., fasc. 205: 130;
 Huckett, 1965, in Stone *et al.*, U.S. Dept. Agr., Agr. Handbook 276: 867.



FIGS. 1-6. Details of *Ganperdea apivora* (Aldrich) paratypes. 1, male postabdomen, sinistral view; 2, same, posterior view; 3, female postabdomen, ventral view; 4, same, dorsal view; 5, male fifth sternite; 6, male right antenna, mesal view.

The holotype and allotype of *G. apivora* were collected from the cells of the bee *Anthophora abrupta* Say at Carondelet, Missouri, in 1877; paratypes also were from Santa Fe and Pecos, New Mexico. Also in the United States National Museum collections are a specimen from Denver, Colorado; two from Camp Franklin, Chesapeake Beach, Maryland 5 June 1938 (David G. Hall); and three from Beltsville, Maryland, emerged indoors from cell of anthophorid bee, 13-16 May 1963 (N. Teter).

The postabdomen of neither sex has been described; therefore, figs. 1-6 are presented for comparison with those of *G. mallochii* (Huckett), *v.i.*

In the male postabdomen (Figs. 1 and 2) the aedeagus and surstyli (posterior forceps) are longer, more slender, and more curved in *G. mallochii*, and the gonapophyses differ in shape and number of bristles. The fifth sternite (Fig. 5) also is somewhat broader and has longer processes than in *G. mallochii*.

The female postabdomen (ovipositor; Figs. 3 and 4) is also very similar to that of *G. mallochii*; the cerci bear three strong apical spines; the details of bristling and shape of sclerites, however, differ somewhat. There are three spermathecae of the shape shown in Fig. 4.

Ganperdea mallochii (Huckett), **new combination**

Neohylemyia mallochii Huckett, 1924, Cornell Univ. Agric. Expt. Sta. Mem. 77: 37, pl. V, Fig. 50; pl. XII, Fig. 140; pl. XIII, Fig. 155; pl. XV, Fig. 168; Leonard, 1928, Cornell Univ. Agric. Expt. Sta. Mem. 101: 837; Séguy, 1937, Gen. Ins., fasc. 205: 130; Huckett, 1965, in Stone *et al.*, U.S. Dept. Agr., Agr. Handbook 276: 867.

The only known material is from Ithaca and Long Island, New York; Leonard lists the same records. Huckett's original description includes figures of the male and female postabdomens and male fifth sternite.

LITERATURE CITED

STONE, A., *ET AL.* 1965. Catalog of the Diptera of America north of Mexico. U.S. Dept. Agr., Agr. Handbook 276: i-iv, 1-1696.